SECTION 16670 - LIGHTNING PROTECTION SYSTEM

PART-1-GENERAL

1.1 SUMMARY

A. This section includes the installation of a lightning protection system on building roof(s).

1.2 REFERENCE STANDARDS

A. National Fire Protection Association

1. NFPA 70 National Electric Code
2. NFPA 780 Standard for the installation of Lightning Protection System

B. Underwriters Laboratories(UL)

1. UL96A Installation Requirements for Lightning Protection Systems

C. Lightning Protection Institute

1. LPI 175 Standard of Practice for the Design, Installation, and Inspection of Lightning Protection Systems

1.3 SUBMITTAL REQUIREMENTS

A. Manufacturer's Product Data:

B. Submit material specification data for products specified under PART 2 - PRODUCTS.

C. Submit shop drawings for fabrication, erection, wiring and connections to show compliance with NFPA 780 from the lightning protection manufacturer prior to installation.

D. Include plans and elevations at not less than 1/16" to 1'-0" scale with details at not less than 3" to 1'-0" scale.

E. Indicate the complete system cable routing (both horizontal and vertical), all devices, connections, bonding, penetrations, grounding and ground resistances.

F. Indicate required anchorage and accessory items, field dimensions, finishes, method of connection and routing.

1.4 Certificates:

A. The installation shall be made by or under supervision of an LPI

Certified installer. Obtain and submit installer certification.

PART-2 PRODUCTS

2.1 GENERAL:

A. Provide system material to install a lightning protection system. All material shall be labeled Per UL #96 A and conform with NFPA #780.

B. The system shall be tested for proper grounding in accordance with 3.3 Field Quality Control.

2.2 Main Roof Conductor:

A. Aluminum, 37 strands of 13 gauge, rope lay 190#/1000 ft.

2.3 Air Terminals and Bases:

A. Solid round aluminum rod, 5/8" diameter with blunt tip and 5/8" external threaded adapter base or as noted on the plans.

B. New terminal bases shall be of cast aluminum with bolted pressure cable connections and utilize stainless steel hardware. The base-to-roof attachment shall conform to the roof construction and as noted on the plans.

2.4 Bonding Plates:

A. Cast aluminum bonding plate with bolted pressure cable connector and stainless steel hardware. The configuration shall match the characteristics, cable arrangement and attachment required for bonding. Minimum of 8 square inches of contact area.

2.5 Cable Fasteners:

A. Electrically compatible with conductor material and to the surface to which it attaches.

2.6 Cable Splicers and Connectors:

A. Cast aluminum, select to be electrically compatible with conductor, with bolt pressure connections and stainless steel hardware.

2.7 MANUFACTURERS

A. In order to define requirements for material specifications, and provide total system responsibility all products shall be compatible for connection with existing as furnished by one of the following manufacturers.

1. Heary Brothers Lightning Protection, Inc.

2. Independent Protection Company, Inc.

3. Thompson Lightning Protection, Inc.

4. Robbins Lightning, Inc.

PART-3 EXECUTION

3.1 GENERAL:

A. Roof Conductor:

1. Utilize aluminum conductor.

B. Air Terminals and Bases:

1. Utilize aluminum rods.

C. Bonding Plates:

1. Provide bonding plates for cable bonding to all metallic and structural items. Materials shall be electrically compatible.

D. Cable Fasteners:

1. Provide cable fasteners to secure cables.

E. Cable Splices and Connections:

1. Provide bolt pressure cable splices and connectors for all exposed and accessible applications.

3.2 INSTALLATION

A. The system shall be installed per UL, NFPA and manufacturer's drawings, data and instructions.

B. Air Terminals:

1. Provide Air Terminals as shown on the Drawings.

C. Conductors**:**

1. At all connections aluminum to existing copper, bi-metal connectors shall be used. conductors shall be coursed to interconnect all air terminals so as to provide a 2-way path to ground.

2. The angle of any turn shall not exceed 90 degrees and shall provide a horizontal or downward path. No bend shall have a radius of less than 8".

D. Fasteners:

1. Conductors shall be secured at a maximum of 3′ o.c. with appropriate fasteners for the cable size and material to which it is fastened.

E. Bonding:

1. Metallic bodies on the roof shall be connected to the lightning protection system using Class II conductors, fittings, and splicers.

3.3 FIELD QUALITY CONTROL

A. Test the grounding system to ensure continuity and that the resistance to ground is not in excess of 10 ohms per NFPA 780 annex "E" using a Biddle meter or equal. Submit results in writing to the COR.

B. Make a visual inspection to verify that all connections have been made firm (i.e. not loose causing high resistance).

* * * END OF SECTION * * *